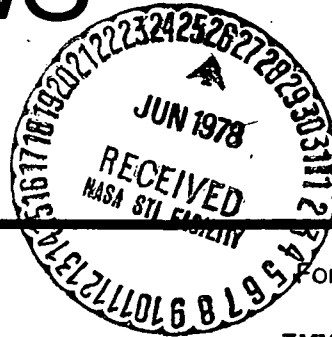


# NASA News

National Aeronautics and  
Space Administration

Washington, D.C. 20546  
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For Release:

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IMMEDIATE

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RELEASE NO: 78-86

## NASA TO LAUNCH COMSAT GENERAL'S COMSTAR D-3 SATELLITE

NASA's launch of the COMSTAR D-3 high capacity satellite for United States domestic telephone communications is scheduled for Thursday, June 29 by the Kennedy Space Center, Fla. The launch vehicle will be an Atlas Centaur, with liftoff planned at 5:51 p.m. EDT from Launch Complex 36 at Cape Canaveral.

The June 29 launch window extends from 5:51 p.m. to 6:34 p.m. EDT. NASA will be reimbursed for the launch by the COMSAT General Corp., Washington, D.C.

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(NASA-News-Release-78-86) NASA TO LAUNCH  
COMSAT GENERAL'S COMSTAR D-3 SATELLITE  
(National Aeronautics and Space  
Administration) 9 p

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NASA's launch team is responsible for placing COMSTAR D-3 in a highly elliptical transfer orbit with an apogee of 35,788 kilometers (22,240 miles) and a perigee of 547 km (341 mi.). Tracking and commands to the spacecraft remain NASA's responsibility until a transfer orbit is successfully achieved.

At this point in the mission, the COMSAT General System Control Center, Washington, D.C., will assume control and tracking functions and issue the command firing the COMSTAR D-3 apogee kick motor, circularizing its orbit at 35,788 km (22,240 mi.), moving at a speed synchronous with the Earth's rotation and in the plane of the equator. Apogee kick motor firing is planned for the fifth apogee about 48 hours after launch.

COMSAT General has applied to the Federal Communications Commission for authority to position the third COMSTAR at 131.8 degrees West longitude, or, alternatively, at 87 degrees W. longitude. (The first COMSTAR is at 128 degrees W. longitude, the second at 95 degrees W. longitude.)

The COMSTAR spacecraft has a design life of seven years. Height of the spacecraft is 610 centimeters (20 feet); diameter, 244 cm (8 ft.); weight before liftoff, 1,518 kilograms (3,347 pounds); weight in orbit 792 kg (1,746 lb.).

NASA's Lewis Research Center, Cleveland, Ohio, has management responsibility for the Atlas Centaur development and operation. NASA's Kennedy Space Center, Fla., is assigned vehicle checkout and launch responsibility once the vehicle reaches Cape Canaveral.

This COMSTAR D-3 launch costs approximately \$47 million -- \$21 million for the satellite and \$25 million for the Atlas Centaur launch vehicle and related services.

(END OF GENERAL RELEASE. BACKGROUND INFORMATION FOLLOWS.)

### ATLAS CENTAUR LAUNCH VEHICLE STATISTICS

The COMSTAR spacecraft will be launched by the Atlas Centaur. The launch vehicle has the following general characteristics:

Height: 40.8 meters (134 feet) including nose fairing

Diameter: 3.05 m (10 ft.)

Total Liftoff Weight: 147,926 kilograms (326,120 pounds)  
(including spacecraft)

Liftoff Thrust: 1,917,088 newtons (431,000 lb.)  
(sea level)

#### Atlas Stage

The Atlas stage consists of the booster section (one-half stage) and the sustainer/vernier section (first stage). The Atlas is manufactured by General Dynamics Convair using the MA-5 engine system supplied by Rocketdyne Division of Rockwell International. The MA-5 system consists of two booster engines, one sustainer engine and two vernier engines. The Atlas stage has the following characteristics:

Height: 21.2 m (69.5 ft.)

Diameter: 3.05 m (10 ft.)

Propellants: RP-1 kerosene for fuel and liquid oxygen  
(LOX) as the oxidizer

Thrust: Total Booster: 1,645,760 N (370,000 lb.)  
(sea level)

Sustainer: 266,880 N (60,000 lb.)

Total Vernier: 4,448 N (1,000 lb.)

Total Liftoff Thrust: 1,917,088 N (431,000 lb.)

Centaur Stage

The Centaur (second stage) is manufactured by General Dynamics Convair using the RL-10 engines supplied by Pratt and Whitney Aircraft Group. This stage has the following characteristics:

Height: 9.1 m (30 ft.)

Diameter: 3.05 m (10 ft.)

Propellants: Liquid hydrogen for fuel and liquid oxygen for the oxidizer

Thrust: 133,440 N (30,000 lb.)  
(vacuum)

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# TYPICAL LAUNCH SEQUENCE FOR COMSTAR D-3

| Flight Events             | Time<br>Min/Sec | Altitude<br>Kilometers/Miles |       | Earth Relative Velocity<br>Km/Hr | Mph    |
|---------------------------|-----------------|------------------------------|-------|----------------------------------|--------|
| Liftoff                   | 0               | 0                            | 0     | 0                                | 0      |
| BECO                      | 2:20.4          | 57.8                         | 35.9  | 9,202                            | 5,718  |
| Booster Jettison          | 2:23.5          | 60.9                         | 37.8  | 9,303                            | 5,781  |
| Insulation Panel Jettison | 3:05.4          | 98.7                         | 61.4  | 10,439                           | 6,487  |
| SECO/VECO                 | 4:07.4          | 144.9                        | 90.1  | 13,051                           | 8,109  |
| Centaur Separation        | 4:09.4          | 146.3                        | 90.9  | 13,049                           | 8,108  |
| Centaur MES (1)           | 4:18.9          | 152.3                        | 94.7  | 12,987                           | 8,070  |
| Nose Fairing Jettison     | 4:30.9          | 159.2                        | 99.0  | 13,194                           | 8,198  |
| Centaur MECO (1)          | 10:20.3         | 189.2                        | 117.5 | 28,029                           | 17,416 |
| Centaur MES (2)           | 24:53.2         | 559.0                        | 347.3 | 26,538                           | 16,490 |
| Centaur MECO (2)          | 26:19.1         | 627.5                        | 389.9 | 33,862                           | 21,041 |
| Spacecraft Separation     | 28:34.1         | 807.0                        | 501.4 | 33,329                           | 20,710 |

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### LAUNCH OPERATIONS

A NASA-contractor team under the direction of Kennedy Space Center's Expendable Directorate is responsible for the preparation and launch of unmanned space vehicles from Cape Canaveral Air Force Station.

The Atlas (5021 D) and Centaur (AC-41) arrived at Kennedy Space Center April 12. Atlas Centaur-41 with COMSTAR D-3 will be launched from Pad B, southernmost of the two pads at Launch Complex 36.

AC-41 was erected on Pad B April 19-20. The COMSTAR spacecraft was delivered to the Cape April 24 and underwent initial processing in Hangar AM. The spacecraft was moved to Spacecraft Assembly and Encapsulation Facility-2 (SAEF-2) in the Kennedy Space Center Industrial Area June 13 where it was encapsulated within its payload shroud June 20.

The spacecraft was moved to Pad B and mated with AC-41 June 21. A series of electrical and functional checks have been performed which are designed to clear AC-41 and COMSTAR D-3 for planned launch June 29.

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ATLAS CENTAUR/COMSTAR D-3 TEAM

NASA Headquarters

|                 |                                                       |
|-----------------|-------------------------------------------------------|
| John F. Yardley | Associate Administrator<br>for Space Flight           |
| Joseph B. Mahon | Director of Launch Vehicle<br>and Propulsion Programs |
| F. R. Schmidt   | Manager, Atlas Centaur                                |

Lewis Research Center

|                        |                                      |
|------------------------|--------------------------------------|
| Dr. Bernard Lubarsky   | Acting Director                      |
| Dr. Seymour C. Himmel  | Associate Director                   |
| Lawrence J. Ross       | Director of Launch Vehicles          |
| Richard E. Orezekowski | Intelsat Mission Project<br>Engineer |

Kennedy Space Center

|                       |                                        |
|-----------------------|----------------------------------------|
| Lee R. Scherer        | Director                               |
| Gerald D. Griffin     | Deputy Director                        |
| Dr. Walter J. Kapryan | Director, Space Vehicles<br>Operations |
| George F. Page        | Director, Expendable Vehicles          |
| John D. Gossett       | Chief, Centaur Operations              |
| Creighton A. Terhune  | Chief Engineer, Atlas Centaur          |
| Floyd Curington       | Spacecraft Coordinator                 |
| J. W. Meyers          | Centaur Test Controller                |



COMSAT GENERAL/COMSTAR

|                            |                                                                    |
|----------------------------|--------------------------------------------------------------------|
| Dr. Joseph V. Charyk       | President, COMSAT                                                  |
| Dr. John L. McLucas        | President, COMSAT General Corp.                                    |
| John L. Martin, Jr.        | COMSAT General Vice President, Systems Engineering and Development |
| Eugene T. Jilg             | Assistant Vice President, Engineering                              |
| Allan M. McCaskill         | Manager, Launch Vehicles                                           |
| <u>Hughes Aircraft Co.</u> |                                                                    |
| A. T. Owens                | COMSTAR D-3 Project Manager                                        |

CONTRACTORS

|                                                                            |                                             |
|----------------------------------------------------------------------------|---------------------------------------------|
| General Dynamics/Convair<br>San Diego, Calif.                              | Atlas Centaur launch vehicle                |
| Honeywell Aerospace Division<br>St. Petersburg, Fla.                       | Centaur guidance inertial measurement group |
| Pratt and Whitney<br>West Palm Beach, Fla.                                 | Centaur RL-10 engines                       |
| Teledyne Industries, Inc.<br>Northridge, Calif.                            | Digital computer unit/PCM telemetry         |
| Rocketdyne Division<br>Rockwell International Corp.<br>Canoga Park, Calif. | MA-5 propulsion systems                     |